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Woven Solutions for Soil Erosion Control

USAID/US-AEP helps to establish a biodegradable soil erosion technique in Sri Lanka...

"EcoProtect Engineering has pioneered an environmentally friendly soil erosion control technique in Sri Lanka. In addition to preventing erosion, this technique prevents silting of lakes and reservoirs and saves expensive de-silting costs; it reduces sand and cement use; saves foreign exchange, generates employment, and adds value to local products."

Rashmi Dassanayake,
Operations Director,
EcoProtect Engineering

Challenge

In Sri Lanka, infrastructure projects are underway in various ecological regions, including areas with steep slopes. Roads, buildings, and industrial parks being developed lead to changes in the landscape that require solutions to arising soil erosion and drainage issues. In many cases this is addressed with more concrete and steel, or leaving unprotected areas vulnerable to landslides and siltation of water bodies including reservoirs. Meanwhile, Sri Lanka manufactures and exports Rs. 150 million ($1.5 million) in coir-based "geo-textile" erosion control products to international markets every year, but this biodegradable and environmentally friendly technique has never been adopted in Sri Lanka.

Initiative

Coir is made from coconut fiber, and the coir erosion control nets and logs are woven from coir rope. The nets are spread over the exposed hill slope to hold in the loose soil and provides a base for growing plants as coir is a natural soil enhancer and moisture retainer. Once the vegetation is established the coir degrades slowly, leaving the slope well protected from erosion. Vegetation for the slopes, grown on the surface soil through the anchored coir nets, can be grass or other indigenous plants with good root systems, while the ridges are primarily stabilized with coir logs and "live fences" made from trees and other plants. The species are chosen to suit the environment, water needs and maintenance requirements.

This method of erosion control with growing popularity in other countries was introduced to Sri Lanka through a grant from USAID/US-AEP to EcoProtect Engineering (Pvt) Ltd, a local company interested in adding value to local products while introducing environmental best practices.

With technical assistance from Coco Technologies in the Philippines, EcoProtect Engineering has established, for the first time in Sri Lanka, an eco-friendly bio-engineered soil erosion control system using locally made coir fiber nets and logs on a road embankment covering a surface area of 1,300 square meters on a section of the new Southern highway in Baddegama, Galle. Approximately 500 square meters is covered with native grasses.

Results

Six months later, there is no evidence of erosion on the road embankment covered with geo-textiles and plants. The vegetation has flourished and has formed an aesthetically pleasing green carpet that is in sharp contrast to the bare slopes that surround it.

The contractors for the southern highway have expressed their interest in expanding this erosion control method to more slopes along the route. EcoProtect has also received a request to use this method for tank rehabilitation in the North Western Province.

Geo-textiles will also be tested in a different climatic zone on landslide prone slopes and in a tea plantation housing development in Deniyaya. Results have also been reported to the USAID-sponsored Coir Cluster for wider dissemination internationally, and locally.